who may desire to avail themselves of the advantages of the institution," and the Field fund of 100*l*., the income of which is "to provide for the minor needs of a scholar or fellow." These fellowships are intended for young men and women of promise who desire to pursue post-graduate studies in order to fit themselves for intellectual careers. In general, those intending to devote themselves to some special branch of learning are preferred to those directly fitting themselves for one of the "three learned professions."

AT the Convocation of the Calcutta University on March 3, the Vice-Chancellor, Sir Alexander Pedler, dealt with the work of the University during the period 1873–1905. He said that the number of schools sending up candidates to the matriculation examination of the University was three times greater at the end than at the beginning of the period. In the same interval the number of colleges in connection with the University increased from fifty-two to eighty-one, and the number of professors and lecturers in these colleges from 278 to 717. Sir Alexander Pedler went on to ask, Has the University in any way troubled itself to secure that this expansion has been accompanied by the provision of three or four times the number of equally well trained and experienced professors and teachers? Has the University ascertained that the new schools and colleges are equal in quality to those of older and more mature growth? Are three or four times as many well trained or well paid teachers at work in the colleges and schools as thirty years ago? Are there three times as many professors or teachers for the colleges, trained in all the modern developments of western learning and acquainted with all the most recent discoveries in science as there were thirty years ago? To all these questions he said a direct negative must be given. The Government, which in its colleges ought to take the lead in such matters, has allowed a reverse policy to go on, and while in 1873 in Bengal the number of European professors or Indian professors with European training in Government colleges was thirty-one, in 1905 the number had fallen to twenty-seven, while the number of Indian or Indian trained professors had increased from nineteen to sixty. In university work in European countries and in England, when the number of students under instruction in colleges is compared with the number of professors and lecturers in various subjects engaged in teaching them, it is found, Sir Alexander Pedler said, to be about ten students to each professor. In the case of American technical colleges, frequently the ratio works out at one professor to seven or eight students. At the Michigan University one professor for every six students is found, and also at the Toronto University. Turning to the case of India, in the arts sections of certain colleges affiliated to the Calcutta University, for every professor there are such numbers of students as fifty-three or forty-six, and other similar numbers, or from five to nine times as many students as in other countries.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, January 18.—"A Study of the Mechanism of Carbon Assimilation in Green Plants." By Francis L. **Usher** and J. H. **Priestley.** Communicated by Prof. W. M. Travers, F.R.S.

(1) The photolysis of carbon dioxide may take place outside the plant in absence of chlorophyll, provided one of the products is removed.

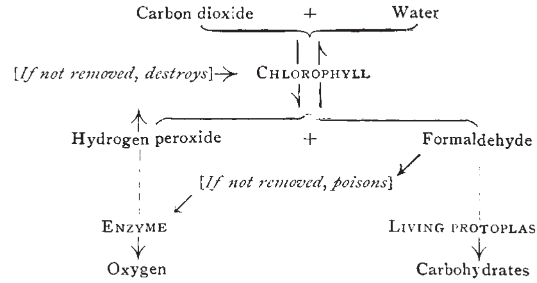
(2) The normal products of the photolysis are hydrogen peroxide and formaldehyde, though under certain conditions formic acid may be formed.

(3) In the plant the decomposition of the hydrogen peroxide is provided for by a catalysing enzyme of general occurrence.

(4) The condensation of the formaldehyde is dependent on the healthy condition of the protoplasm.

There are therefore three factors essential to photosynthesis from carbon dioxide and water in the plant; they are (1) vitality of the protoplasm, (2) presence of a catalysing enzyme, and (3) presence of chlorophyll. If any one of these factors be interfered with, the process of photosynthesis ultimately comes to an end, through the destruction of the optical sensitiser, chlorophyll.

The relations between the various factors in this process may be diagrammatically expressed thus:—


Carbon dioxide + Water
[*If not removed, destroys*]→ CHLOROPHYLL
Hydrogen peroxide + Formaldehyde
[*If not removed, poisons*]
ENZYME
LIVING PROTOPLASM
Oxygen
Carbohydrates

Society of Chemical Industry, March 5.—Mr. A. G. Salamon in the chair.—The ignition of nitro-compound explosives in small arm cartridges: W. D. **Borland.** The action of the igniter, *i.e.* the percussion cap, is to eject through the fire holes of the case a mixture of solid and gaseous products at temperatures between 2400° C. and 3200° C. in such quantity, volume, and time that the initial resistance of the bullet or shot is overcome before the bulk of the charge of powder develops its full energy, but without any hesitation which may upset alignment or perceptible "hang-fire." The rapidity with which these gaseous and solid matters are applied to the powder is determined by exploding the percussion cap in a hollow steel cylinder provided with a hardened steel plunger and resting upon a crusher lead. The proportion which the crushing pressure bears to total energy is found in practice to be a trustworthy guide to the rapidity with which the heat of the igniter is applied to the explosive, and consequently to the ratio which chamber pressures in the small arm bear to observed velocity of projectile. The volume of the gaseous matters in relation to the surface of the explosive can be readily determined. These must be large enough to ensure sufficiently high chamber pressures being set up for the most efficient combustion of the powder. The temperature of ignition was determined by radiation methods of observation, the cap being exploded into a glass tube and the radiation intensity of the solids observed by comparison with a radiant of known intensity, the portion of the spectrum chosen being in the neighbourhood of 6563 wave-length. The paper includes tables illustrating the action of different igniters on different explosives, both sporting and military, and tracing the effect of total heat energy and temperature of igniter upon velocity, pressure, and rapidity of ignition observed in ballistic trials.

Zoological Society, March 6.—Mr. C. S. Tomes, F.R.S., vice-president, in the chair.—A specimen of *Rana goliath*, obtained by Mr. G. L. Bates at Efulen, in South Cameroon: G. A. **Boulenger.** This frog measured 10 inches from snout to vent, and was much larger than any frog hitherto known.—"Flying" snakes: R. **Shelford.** The power of "flying" has been recorded by natives to be possessed by three species of snakes in Borneo, viz. *Chrysopelea ornata, C. chrysochlora* (Opisthoglypha), and *Dendrophis pictus* (Aglypha). All three species have the ventral scales with a suture or hinge-line on each side; by means of a muscular contraction these scales can be drawn inwards, so that the whole ventral surface of the snake becomes quite concave, and the snake itself may be compared to a rod of bamboo bisected longitudinally. By experiments on *C. ornata* it was seen that the snake when falling from a height descended, not in writhing coils, but with the body held stiff and rigid, and that the line of the fall was at an angle to a straight line from the point of departure to the ground. It is highly probable that the concave ventral surface of the snake helps to buoy it up in its fall; it can readily be shown that a longitudinally bisected rod of bamboo falls more slowly than an undivided rod of equal weight.—A series of reports on the zoological results of the third Tanganyika expedition conducted by Mr. W. A. Cunnington in 1904–5 was read. Report on the fishes: G. A. **Boulenger.** The collection consisted of 300 specimens referable to eighty-four species, twenty-eight of which were new.—Crustacea: Dr. W. T. **Calman.** In addition to the two species already known from Lake Tanganyika, no fewer than ten specimens of new species belonging to the family Atyidæ, including the representatives of two new genera, were obtained. From lakes Nyasa and Victoria Nyanza only a single species was obtained, the widely distributed *Caridina nilotica* (*C. wyckii*). The absence of this common species from the gatherings made in Tanganyika emphasised the isolated character of the Macruran fauna of that lake. All the species found in Tanganyika, and all but one of the genera, were peculiar to the lake. There was no ground for regarding the Macrura of Tanganyika as having any specially "marine" affinities. The other members of the groups to which they belonged, the genus Palæmon and the family Atyidæ, were characteristically, and all but exclusively, fresh-water animals.—Mollusca: E. A. **Smith.** This collection contained examples of thirty-three species, one of which was new.—Fresh-water sponges obtained from lakes Victoria Nyanza, Tanganyika, and Nyasa: R. **Kirkpatrick.** The collection comprised eleven specimens representing five species, one from Tanganyika being new to science, two others from Tanganyika (*Spongilla moorei*, Evans, and *S. tanganyikae*, Evans) having already been recorded from that locality. Small specimens of a fourth species, viz. *Spongilla carteri*, Bowerbank, were obtained from the Victoria Nyanza, and a fairly large specimen of a fifth, viz. *Spongilla biseriata*, Weltner, was collected in a swamp bordering Lake Nyasa. Included in Mr. Kirkpatrick's report were descriptions of two new species and a new variety of fresh-water sponges, based on material obtained from the White Nile.—Oligochæte worms: F. E. **Beddard.** They comprised examples of four new species.—The medusæ of the genus Limnocnida obtained during the expedition: R. T. **Günther.**

Geological Society, March 7.—Sir Archibald Geikie, Sec.R.S., president, in the chair.—The occurrence of limestone of the Lower Carboniferous series in the Cannock-Chase portion of the South Staffordshire Coalfield: G. M. **Cockin.** Silurian limestone underlies the Coal-measures in the southern part of the South Staffordshire Coalfield, and a rock, probably similar, was found in a borehole at Cannock-Chase Colliery. A shaft was sunk some thirty years ago north of the latter locality, but was abandoned. In the waste-heaps, which have remained undisturbed since 1875, a number of fossils belonging to the Lower Carboniferous Limestone have been found. A fault must be presumed to bring Carboniferous Limestone into the position indicated. An account of the strata pierced by boring is appended.—Liassic Dentaliidæ: L. **Richardson.** Among the fossils collected in the cuttings on the new Honeybourne and Cheltenham Railway were many belonging to the family Dentaliidæ, and, as the majority are new, the author has investigated the Liassic members of the family contained in several collections. The growth of the scaphopod-shell is effected by additions at the anterior end, while the posterior end suffers by wear and absorption. The members of this class are essentially marine, inhabiting deep water, and feeding principally on Foraminifera. Eight new species are described, and eight species already known are discussed.

Entomological Society, March 7.—Mr. F. Merrifield, president, in the chair.—Two specimens of *Microdon latifrons*, Lw., a rare dipteron taken in the New Forest in June, 1905: H. W. **Andrews.**—Examples of *Nonagria neurica*, Hb., and *N. dissoluta*, var. *arundineta*, Schmidt, from Germany, with (?) var. *arundineta* from Central Asia, for comparison with *N. dissoluta* and *N.* var. *arundineta* from Kent, Cambridge, and Norfolk: H. M. **Edelsten.**—A variable series of *Gynopteryx gladiaria*, Guen., and its varieties: L. B. **Prout.**—Combs of the honey bee formed on a branch of nut tree, the bees having swarmed late in the year: A. J. **Chitty.** After July the bees deserted the combs, and, having consumed all the honey contained in them, again swarmed on a neighbouring tree.—A specimen of *Prodenia littoralis*, Boisd., which had emerged in a breeding-cage kept, with many others, by Major R. B. Robertson at Boscombe, Hants, for the reception of caterpillars found in that district: Prof. R. **Meldola.** The moth emerged on July 16, 1905. The species, which is figured in Hampson's "Moths of India," is said to have a distribution extending from the Mediterranean subregion throughout the tropical and subtropical zones of the Old World.—A Mantis on a portion of the bark of a tree found by Mr. F. Birch in Trinidad, who stated that its close resemblance to a withered leaf was evidently a protection for aggressive purposes: O. E. **Janson.**—A series of Callimenidæ; a small family of Orthoptera, consisting of two genera, Dinarchus, with the single species *D. dasypus*, Illig., and Callimenus, of which all the known species were included, with the exception of *C. inflatus*, Br., from Asia Minor: M. **Burr.**—Specimens of *Argynnis niobe*, var. *eris*, ♀, from the Pyrenees, Cevennes, and south Tyrolese mountains: H. **Rowland-Brown.** Attention was directed to the remarkable form of the example taken at Gavarnie, in July, 1905, of which the coloration of the upper side of all the wings was ruddy copper-red shot with blue upon the nervures. Whereas specimens of *eris* and other Argynnids from the mountainous regions of central France showed a tendency to maintain constant pale forms, those from the Pyrenees are generally more highly coloured, while the high Alpine forms of Central Europe inclined to melanism.—An original note-book of Burchell's taken to South Africa in 1812: Prof. E. B. **Poulton.** The note-book established the date of the author's birthday, hitherto unknown, to be July 12, while it also recorded, for the first time, the superstitious dread of the native Hottentots for the "death's head moth," known locally as the "devil bee."—Specimens of Pierine butterflies from South Africa, India, and Asia Minor: Dr. F. A. **Dixey.** The specimens illustrated how the under sides of the dry-season forms in the group are apt to take a red tinge, and it was especially interesting to note that the same tendency was manifest in all species collected from such widely separate regions.—Note on the migration of Lepidoptera against the wind, extracted from a report on "The Pearl Oyster of the Gulf of Manaar, *Avicula* (*meleagrina*) *fucata*," by Henry Sullivan Thomas, in the *Madras Journal of Literature and Science*: C. O. **Waterhouse.**—A plague of ants in the Observatory district, Cape Town, South Africa: Colonel C. T. **Bingham.**—Some rest attitudes in butterflies: Dr. G. B. **Longstaff.** The paper was illustrated by numerous specimens arranged upon backgrounds of specially prepared sand-paper approximating to the natural surroundings of the insects in their various habitats.—Observations on the life-history of *Trichoptilus paludum*, Zell.: Dr. T. A. **Chapman.**—Some parasitic hymenopterous insects of North Queensland: F. P. **Dodd.**

Physical Society, March 9.—Dr. C. Chree, vice-president, in the chair.—The velocities of the ions of alkali salt vapours at high temperatures: Prof. H. A. **Wilson.** This paper contains a summary of previous work. It is shown that all results so far obtained are consistent with the view that any salt of cæsium, rubidium, potassium, sodium, or lithium gives in a Bunsen flame negative ions having a velocity of 1000 cm. per sec. for one volt per cm., and positive ions having a velocity of about 80 cm. per sec. This result can be explained by supposing that each salt molecule emits a negative corpuscle which forms the negative ion, and that the rest of the molecule forms the positive ion.—Some experiments on earth-currents at Kew Observatory: Dr. J. A. **Harker.** An account of experiments made some years ago at Kew Observatory on the earth-currents produced by electric traction schemes, and on the disturbances they cause on the self-recording magnetic instruments kept continuously running to register the variations in the declination and the horizontal and vertical forces. Two large earth-plates were buried about 4 feet deep and 200 yards apart, and connected through a photographic recording voltmeter of high resistance. On the traces given, the effect of the trains on the Central London Railway was strikingly shown. The nearest point to Kew is about six miles distant. The same disturbances, and also those due to special traction experiments carried out on the system of the London United Electric Tramway

Company during the period when the Central London Railway was shut down, were also clearly shown on magnetograph curves. The effects are much greater on the vertical force than on the horizontal force or the declination. A second system of investigation was to connect the earth-plates through the primary of a transformer, the secondary terminals of which were connected to a sensitive moving-coil galvanometer of suitable period and damping. The galvanometer recorded a ballastic throw for each movement of a tramway controller, while the slower variations due to magnetic storms were without effect. A telephone similarly connected gave a perceptible sound for each controller movement.

Royal Meteorological Society, March 21.—Mr. R. Bentley, president, in the chair.—South Africa as seen by a meteorologist: Dr. H. R. **Mill.** The lecture was illustrated by a series of lantern-slides from photographs taken during the tour of the British Association in 1905. The places visited included Cape Town, Table Mountain, Durban, Maritzburg, Ladysmith, Johannesburg, Pretoria, Bloemfontein, Kimberley, Bulawayo, the Matoppo Hills, the Victoria Falls of the Zambesi, Salisbury, Umtali, and Beira. During the return journey, Mombasa, Cairo, and the Suez Canal were visited. Photographs were shown of meteorological stations in many of the places named, and the views of the scenery were selected to bring out the climatic features.

CAMBRIDGE.

Philosophical Society, February 12.—Mr. F. Darwin in the chair.—Notes on cycads: with exhibition of a rare species acquired by the Botanic Garden: A. C. **Seward.** The author exhibited a plant of *Cycas Micholitzii*, Dyer, recently obtained by the curator of the Botanic Garden from Messrs. Sanders and Sons. This species was discovered by one of Messrs. Sanders' collectors, Mr. W. Micholitz, in Annam, and described last year by Sir William Thiselton-Dyer in the *Gardeners' Chronicle*, August 19, 1905, p. 142. The author directed attention to the importance of cycads as representing scattered survivals from a remote past, and as plants which still retain traces of ancestral characters.—Respiration and vitality: F. F. **Blackman.**—Experiments on the hybridisation of barleys: R. H. **Biffen.** The behaviour of the more important differentiating characters to be found among the varieties of barley has been investigated.—A comparison of the results from the Falmouth declination and horizontal force magnetographs on quiet days in years of sun-spot maximum and minimum: Dr. **Chree.**

February 26.—Dr. Fenton, vice-president, in the chair.—An indicator for strong acids and bases: Dr. **Fenton.** Reference was made in previous communications by the author to a new condensation product, derived from methylfurfural, which has the molecular formula $C_{11}H_8O_4$. It was pointed out that this substance may have useful applications in organic analysis, since it gives highly characteristic colour-reactions with certain classes of compounds, such as amines and ureas. In the present paper it is shown that the reagent serves also as an indicator of alkalinity, and further, that by condensation with urea a colourless base is obtained which is turned blue with acids, and may therefore be used as an acid indicator.—The action of acid chlorides of acetylenic acids on ketonic compounds: S. **Ruhemann.** The paper gives an account of experiments undertaken with the view of supporting the constitution of the product of the reaction between phenylpropiolyl chloride and acetylacetone, and the formula of the substance formed from it under the influence of secondary bases. The properties of this substance have been found to resemble in every respect those of oxalyldibenzylketone.—The dihydrotetrazines: S. **Ruhemann.** The author has extended his research on tetrazoline, and found that the properties of dimethyltetrazoline differ most markedly from those of tetrazoline.—The velocity of transformation of sugars by alkalies: R. S. **Morrell** and A. E. **Bellars.** Aqueous solutions of glucosates, fructosates, and mannosates of guanidine, potash, and soda undergo slow change indicated by a decline in the rotatory power. The velocity of change, as measured by the diminution of the optical activity of the solutions, is that of a unimolecular reversible reaction. Under the conditions of the experiments glucose and fructose are mutually transformable, the production of mannose and acids proceeding at such a slow rate that glucose and fructose first attain an equilibrium, which is afterwards disturbed by the appearance of steadily increasing quantities of saccharinic acid. In the case of guanidine mannosate solutions, the velocity constant obtained from observations of the fall in rotatory power has nearly the same value as the corresponding one for guanidine glucosate and fructosate, but direct measurement of the rate of disappearance of the mannose gave a very much lower value.—The influence of very strong electromagnetic fields on the spark spectra of (*a*) vanadium, (*b*) platinum and iridium: J. E. **Purvis.** The field strength was 39 980 C.G.S. units. (1) With regard to vanadium, two lines become sextuplets and four lines become quintuplets. There are a number of lines divided into four, whilst the great majority of them become triplets. Also there are a few doublets, and there are about eight lines which do not appear to be affected. The distances of the separated constituents from the normal lines were measured, and the value of $d\lambda/\lambda^2$ calculated; and it is seen that many of the lines may be expressed by the same formula, the appearances of the undivided lines and the separated constituents and the values of $d\lambda/\lambda^2$ being essentially identical. (2) Similarly, with regard to the metals Pt and Ir, there are lines of both metals which may be grouped together as possessing identical $d\lambda/\lambda^2$ values, and the normal lines and separated constituents of which are similar in appearance. (3) In several instances the values of $d\lambda/\lambda^2$ for the several constituents seem to be simple multiples of each other.

PARIS.

Academy of Sciences, March 19.—M. H. Poincaré in the chair.—Observations of nebulæ: M. **Bigourdan.**—The distillation of titanium and the temperature of the sun: Henri **Moissan.** The boiling point of titanium is very high, and it was necessary to employ a current of 1000 amperes at 55 volts in the electric furnace to volatilise it readily. The distilled titanium was obtained on the cold tube mixed with lime, distilled from the furnace body. This lime was removed by acetic acid, and the residue was proved by its chemical properties to be titanium. Taking the temperature of the electric arc as 3500° C. (Violle), it is clear from the fact that titanium vapour exists in the sun that the temperature of the sun must be above 3000° C.—Benzyl- and phenylborneols and their products of dehydration: the benzyl- and phenyl-camphenes: A. **Haller** and E. **Bauer.** The secondary benzylborneol was prepared by the reduction of benzylcamphor, and its dehydration by phthalic anhydride; formic acid and pyruvic acid gave rise to the α-benzylcamphene. The tertiary benzylborneol was prepared by Grignard's reaction from camphor; its dehydration gave an isomeric β-benzylcamphene, the properties and derivatives of which are described.—The facies of variation of certain nepheline syenites from the Los Islands: A. **Lacroix.**—Gennadas, or bathypelagic Peneids: E. L. **Bouvier.**—The sheet of the Geological Survey, on the scale of 1 : 80,000, dealing with the region of Gap: Michel **Lévy.**—Functions which depend on other functions: Vito **Volterra.**—Observations of the Kopff comet (1906*b*) made with the bent equatorial of the Observatory of Lyons: J. **Guillaume.** The observations were made on March 5, 6, and 7. The comet appeared as a nebulous star of 15″ diameter and about 10·5 magnitude.—Observations of the comet 1906*b* made at the Observatory of Algiers with the 31·8 equatorial: MM. **Sy** and **Villatte.** Observations were made on March 5, 6, 7, and 8.—A new solution of the problem of magnetic induction for an isotropic sphere: Tommaso **Boggio.**—The resistance of emission of an antenna: C. **Tissot.** A discussion of the most favourable conditions for using a thermal indicator as a receiver of Hertzian waves.—The mechanism of the positive light: P. **Villard.** The positive column in a Geissler tube is regarded as a chain of gaseous particles traversed by the current. It still remains to be determined whether the emission of light is due to the passage of the current or to the progressive dislocation of the chain by the shock of the negative ions.—Antimony and sulphide of antimony: MM. **Chrétien** and **Guinchant.**—The action of the amino-ethers and imino-chlorides on organo-magnesium derivatives: R. **Marquis.** An attempt at a new general method for the synthesis of ketones, starting with the imino-ether R.C(OR):(NR). The yield in the case of benzophenone is good, but the method is not general. In some cases the imino-chloride gives better results.—The preparation of glycidic ethers and of aldehydes in the hexahydroaromatic series: Georges **Darzens** and P. **Lefébure.** The glycidic esters were obtained by the interaction of chloracetic ester with cyclohexanone in the presence of sodium ethylate. The aldehyde is prepared from the glycidic ester by heating in a vacuum. The reaction has been applied successfully to homologues of cyclohexanone.—The structure and probable origin of the magnetic iron ore of Diélette, Manche: L. **Cayeux.** Conclusions as to the mode of formation of the ore are drawn from a micrographic study.—The gasteropods collected by the Charcot Antarctic Expedition: A. **Vayssière.**—The structure of the sporal wall of the Myxosporidia: L. **Léger** and E. **Hesse.**—A genus of lamellibranchs with multiple mouths: Paul **Pelseneer.** The genus Lima is characterised in its normal condition by having two symmetrical buccal orifices, each of which leads directly into the œsophagus.—X-rays and genital activity: F. **Villemin.**—The disease of wine (Graisse): E. **Kayser** and E. **Manceau.**—The toxin and antitoxin of cholera: MM. **Brau** and **Denier.** The serum of animals which have received the toxin under the skin possesses very slight antitoxic power. The antitoxic power of the serum becomes much more marked when the toxin has been injected into the veins.—The laws of muscular elasticity and their application to energetics: Charles **Henry.**—Some new palæontological data on the Devonian of western Ahenet, Central Sahara (expedition of MM. R. Chudeau and E. F. Gautier): Émile **Haug.**—The fauna of the Lower Coal-measures of Baudour (Hainaut): J. **Cornet.**—The flora of the same: Armand **Renier.**—Chalk and clay on the sea floor: J. **Thoulet.**

DIARY OF SOCIETIES.

THURSDAY, MARCH 29.

ROYAL SOCIETY, at 4.30.—On the Dilatational Stability of the Earth: Lord Rayleigh, O.M., P.R.S.—On the Observations of Stars made in some British Stone Circles. Second Note: Sir J. Norman Lockyer, K.C.B., F.R.S.—The Calculation of Ellipsoidal Harmonics: Sir William D. Niven, K.C.B., F.R.S.

ROYAL INSTITUTION, at 5.—Internal Combustion Engines: Prof. B. Hopkinson.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—*Adjourned Discussion:* Electrical Equipment of the Aberdare Collieries of the Powell Duffryn Company: C. P. Sparks.—Electric Winding, considered Practically and Commercially: W. C. Mountain.

FRIDAY, MARCH 30.

ROYAL INSTITUTION, at 9.—Recent Progress in Magneto-optics: Prof. P. Zeeman.

SATURDAY, MARCH 31.

ROYAL INSTITUTION, at 3.—The Corpuscular Theory of Matter: Prof. J. J. Thomson, F.R.S.

MONDAY, APRIL 2.

SOCIETY OF ARTS at 8.—Fire, Fire Risks, and Fire Extinction: Prof. Vivian B. Lewes.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Ropiness in Flour and Bread, and its detection and Prevention: E. J. Watkins.—The Röse-Herzfeld and Sulphuric Acid Methods for the Determination of the Higher Alcohols.—A Criticism: V. H. Veley, F.R.S.

TUESDAY, APRIL 3.

ROYAL INSTITUTION, at 5.—The Influence of Geology on Scenery: Dr. J. E. Marr, F.R.S.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Harbours of South Africa: C. W. Methven.—*Probable Paper:* On the Resistance of Iron and Steel to Reversals of Direct Stress: Dr. T. E. Stanton and L. Bairstow.

WEDNESDAY, APRIL 4.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Variations in Direction of the Wind, and an Instrument for determining them Graphically: B. F. Beverley.

GEOLOGICAL SOCIETY, at 8.—On a Case of Unconformity and Thrust in the Coal-measures of Northumberland: Prof. G. A. L. Lebour and Dr. J. A. Smythe.—The Carboniferous Succession below the Coal-measures in North Shropshire, Denbighshire, and Flintshire: Dr. Wheelton Hind and J. T. Stobbs.

ENTOMOLOGICAL SOCIETY, at 8.

SOCIETY OF PUBLIC ANALYSTS, at 8.

SOCIETY OF ARTS, at 8.—Ramie and its Possibilities: Mrs. Ernest Hart.

THURSDAY, APRIL 5.

ROYAL SOCIETY, at 4.30.—*Probable Paper:* On the Physiological Action of a Recently Discovered African Arrow Poison: Dr. Charles Bolton.

CHEMICAL SOCIETY, at 8.30.—An Improved Apparatus for measuring Magnetic Rotations and obtaining a Powerful Sodium Light: W. H. Perkin, Sen.—The Rusting of Iron: G. T. Moody.—On the Determination of Carbon in Soils: A. D. Hall, N. H. J. Miller and N. Harmer.—The Electrolysis of the Salts of $\beta\beta$-Dimethylglutaric Acid: J. Walker and J. K. Wood.—Bromo- and Hydroxy-Derivatives of $\beta\beta\beta'\beta'$-Tetramethylsuberic Acid: J. K. Wood.—Some new Orthoxylene Derivatives: G. Stallard.—A new Solvent for Gold. Preliminary Note: J. Moir.—The Molecular Condition in Solution of Ferrous Oxalate: a Correction: S. E. Sheppard and C. E. K. Mees.

ROYAL INSTITUTION, at 5.—Internal Combustion Engines: Prof. B. Hopkinson.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electrical Equipment of the Aberdare Collieries of the Powell Duffryn Company: C. P. Sparks.—Electric Winding considered Practically and Commercially: W. C. Mountain (*Conclusion of Discussion*).

LINNEAN SOCIETY, at 8.—*Exhibition:* Some Plants new to the Pre-Glacial Flora of Great Britain: Clement Reid, F.R.S.—*Papers:* A Second Contribution to the Flora of Africa.—Rubiaceæ and Compositæ, Part II.: Spencer Moore.—The Anatomy of the Stem and Leaf of *Nuytsia floribunda*, R.Br.: E. J. Schwartz.—Taiwanites, a new Genus of Coniferæ from the Island of Formosa: B. Hayata.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY, at 8.—Steam Turbines: G. D'A. Meynell.

FRIDAY, APRIL 6.

MALACOLOGICAL SOCIETY, at 8.—On a Species of the Land Molluscan Genus Dyakia from Siam: Lt.-Col. H. H. Godwin-Austen, F.R.S.—Descriptions of new Species of Land Shells from Peru and Colombia: S. I. Da Costa.—Note on Swainson's Genus Volutilithes: R. Bullen Newton.—Further Notes on the Genus Chloritis, with Description of new Species: G. K. Gude.—*Vertigo parcedentata*, Braun, in Holocene Deposits in Great Britain: A. S. Kennard and B. B. Woodward.

ROYAL INSTITUTION, at 9.—The Physical Basis of Life: W. B. Hardy, F.R.S.

SATURDAY, APRIL 7.

ROYAL INSTITUTION, at 3.—The Corpuscular Theory of Matter: Prof. J. J. Thomson, F.R.S.

THE ESSEX FIELD CLUB (at Essex Museum of Natural History, Stratford), at 6.30.—Salt-making in Essex, Ancient and Modern: Miller Christy.—Neolithic Man in Epping Forest: F. W. and H. Campion.

CONTENTS.

PAGE

Stars and Nebulæ. By Prof. R. A. Gregory 505
British Ascidians. By Dr. W. Garstang 508
The Metallurgy of Iron and Steel. By A. McWilliam 509

Our Book Shelf:—

Lambert: "Glue, Gelatine, and their Allied Products,—C. S. 510
"Webbia-Raccolta di Scritti Botanici publicati in occasione del 50° anniversario della Morti di Fillipo Barker Webb" 510
Goursat: "A Course in Mathematical Analysis" . . 511

Letters to the Editor:—

Agriculture and the Empire.—**M. J. R. Dunstan** . 511
Sea-sickness and Equilibration of the Eyes.—**Alfred Sang** 511
Production of an Electrically Conductive Glass.—**Charles E. S. Phillips** 512
Interpretation of Meteorological Records.—**R. T. Omond** 512
Oscillation of Flame Cones.—**Harold E. Temple; Prof. A. Smithells, F.R.S.** 512
Gas for Heating and Lighting Laboratories.—**Alex. Pardy; Prof. Vivian B. Lewes** 513
Cooperation between Scientific Libraries.—**Dr. Hugh Marshall** 513
The Problems of Geology. (*Illustrated.*) 513
The National Physical Laboratory 514
Notes 515

Our Astronomical Column:—

Comet 1906*c* 518
Observation of Comet 1905*c* after Perihelion 518
New Variable Stars in the Region about γ Sagittæ . 518
The Supposed Nebulosity around Nova Aquilæ No. 2 518
Some Tests of the Snow Telescope 518
Studies on the Synthesis of Peptides and Proteids. By **J. B. C.** 519
The Protection of Birds 521
The Place of Polytechnics in Education. By **Sir Norman Lockyer, K.C.B., F.R.S.** 521
University and Educational Intelligence 524
Societies and Academies 525
Diary of Societies 528